

## Abstract

The present invention concerns a proton-conducting electrolyte membrane obtainable by a method comprising the following steps:

- 5 A) expanding a polymer film with a liquid that contains a vinyl-containing phosphonic acid, and
- B) polymerisation of the vinyl-containing phosphonic acid present in the liquid introduced in step A).

10 An inventive membrane, thanks to its exceptional chemical and thermal properties, is very versatile in its use and is particularly suitable as a polymer-electrolyte-membrane (PEM) in so-called PEM fuel cells.